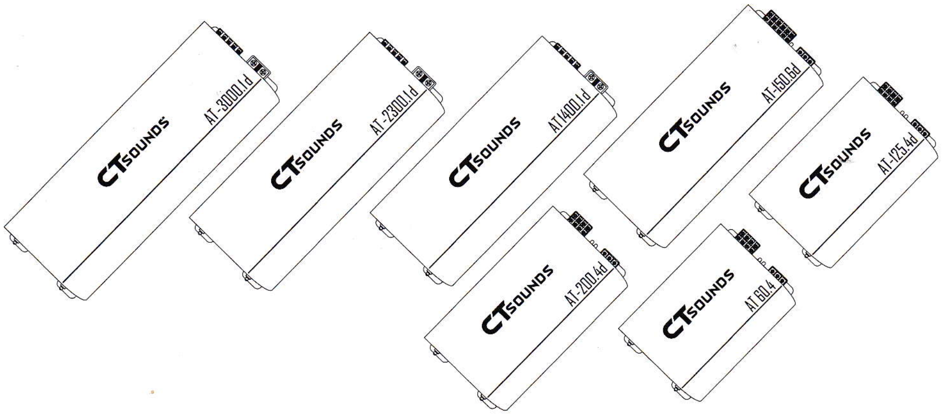
AMPLIFIER

MONOBLOCK, 4 & 6 CHANNEL AMPLIFIER



ATv2-60.4AB | ATv2-125.4D
ATv2-200.4D | ATv2-150.6D
ATv2-1400.1D | ATv2-2300.1D
ATv2-3000.1D

USER MANUAL

INTRODUCTION

Thank you for purchasing a CT Sounds amplifier for your car audio system. You have chosen CT Sounds because you deserve the best!

CT Sounds amplifiers are designed and engineered to the highest quality standards in the industry to create the ultimate listening experience in your vehicle.

For optimal performance of this product, it is highly recommended that you thoroughly read through this manual before getting started. This manual will help familiarize yourself with this amplifier and guide you through the installation process and procedures.

If you have any questions regarding the instructions in this manual or the amplifier's operation capabilities, please contact us at hello@ctsounds.com

MONOBLOCK SPECIFICATIONS

MODEL	ATv2-1400.1d	ATv2-2300.1d	ATv2-3000.1d
AMPLIFIER CLASS:	Monoblock Class D	Monoblock Class D	Monoblock Class D
RMS POWER (13.2V):	1x1400w@1 ohm 1x850w@2 ohm 1x450w@4 ohm	1x2300w@1 ohm 1x1200w@2 ohm 1x650w@4 ohm	1x3000w@1 ohm 1x1600w@2 ohm 1x800w@4 ohm
SUBSONIC FILTER:	10 Hz - 50 Hz	10 Hz - 50 Hz	10 Hz - 50 Hz
FREQUENCY RESPONSE:	10 Hz - 250 Hz	10 Hz - 250 Hz	10 Hz - 250 Hz
LPF:	35 HZ - 250 Hz	35 HZ - 250 Hz	35 HZ - 250 Hz
S/N:	90 dB	90 dB	91 dB
BASS BOOST:	0 - 18 dB	0 - 18 dB	0 - 18 dB
BASS BOOST FREQUENCY:	50 Hz	50 Hz	50 Hz
INPUT IMPEDANCE:	30k ohms	30k ohms	30k ohms
OPERATION VOLTAGE:	DC 9 -16V	DC 9 -16V	DC 9 -16V
MINIMUM SPEAKER IMPEDANCE:	1 ohm	1 ohm	1 ohm
STRAPPABLE?	✓	✓	✓
DIMENSION:	17.99" X 7.60" X 2.28"	19.17" X 7.60" X 2.28"	21.14" X 7.60" X 2.28"

MULTICHANNEL SPECIFICATIONS

MODEL	ATv2-60.4AB	ATv2-125.4d	ATv2-200.4d	ATv2-150.6d
AMPLIFIER CLASS:	4 Channel Class AB	4 Channel Class D	4 Channel Class D	6 Channel Class D
RMS POWER:	4x60w@4ohm 4x80w@2ohm 2x160w@4ohm	4x125w@4 ohm 4x190w@2 ohm 2x400w@4 ohm	4x200w@4 ohm 4x285w@2 ohm 2x500w@4 ohm	6x150w@4ohm 6x250w@2ohm 2x500w@4ohm
FREQUENCY RESPONSE:	20 Hz - 20 kHz	20 Hz - 20 kHz	20 Hz - 20 kHz	20 Hz - 20 kHz
LPF:	50 Hz - 5 kHz	50 Hz - 5 kHz	50 Hz - 5 kHz	50 HZ - 1 kHz (CH1-2) 50 HZ - 500 Hz (CH3-6)
HPF:	50 Hz - 5 kHz	50 Hz - 5 kHz	50 Hz - 5 kHz	50 HZ - 1 kHz (CH1-2) 50 HZ - 500 Hz (CH3-6)
S/N:	90 dB	89 dB	89 dB	90 dB
INPUT IMPEDANCE:	20k ohms	12k ohms	12k ohms	20k ohms
OPERATION VOLTAGE:	DC 9-16V	DC 9-16V	DC 9-16V	DC 9-16V
MINIMUM SPEAKER IMPEDANCE:	2 ohm	2 ohm	2 ohm	2 ohm
DIMENSION:	10.82" X 7.56" X 2.23"	10.43" X 7.60" X 2.28"	12.01" X 7.60" X 2.28"	15.94" X 5.63" X 2.19"

FEATURES

MODEL	ATv2-1400.1d | ATv2-2300.1d | ATv2-3000.1d	ATv2-60.4AB | ATv2-125.4d ATv2-150.6d | ATv2-200.4d
FEATURES	• Remote Volume Controller • Continuously Variable Input Gain Control • Remote Turn-on/Turn-off Circuit • MOSFET Pulse Width Modulated Power Supply • Soft Turn-on Circuit • Thermal and Speaker Short Protection Circuit • LED Power and Protection Indicators	• Continuously Variable Input Gain Control • Remote Turn-on/Turn-off Circuit • MOSFET Pulse Width Modulated Power Supply • Soft Turn-on Circuit • Thermal and Speaker Short Protection Circuit • LED Power and Protection Indicators

INSTALLATION

WARNING: Prolonged exposure to sound pressure levels in excess of 100dB can cause permanent hearing loss. CT Sounds amplifiers can exceed that level so please exercise restraint when listening and enjoying your new amplifier.

GENERAL PRECAUTIONS

- The operation voltage of AT Series Amplifiers is DC 9V to 16V.
- Total system impedance must not be less than 4 ohms bridge mode, 2 ohms stereo mode for the ATv2-60.4AB, ATv2-125.4d, ATv2-200.4d & ATv2-150.6d.
- Total system impedance must not be less than 2 ohms bridge mode or 1 ohm mono mode for ATv2-1400.1d, ATv2-2300.1d & ATv2-3000.1d..
- Avoid installing the unit where: It would be subject to high temperatures, such as from direct sunlight or hot air from the heater. - It would be exposed to rain, moisture, dust or dirt.
- Do not cover the unit with carpet or wires.
- Do not use the unit with a weak auto battery. Optimum performance depends on optimum battery supply voltage.
- For safety reasons, keep the volume of your car audio system moderate while driving your vehicle so that you can still hear normal traffic sounds outside your car.

MOUNTING PRECAUTIONS

Although, CT Sounds amplifiers incorporate heat sinks and protection circuits, mounting the amplifier in a tight space without any air movement can still damage internal circuitry over time. Choose a location that provides adequate ventilation around the amplifier. For easy system set-up, mount the amplifier so the side panel controls will be accessible after installation. To increase thermal run times on low impedance loads, an additional fan is recommended, remember any moving air across the amplifier will reduce heat. In addition, observe the following precautions:

1. Using a felt pen, mark the mounting hole locations.
2. Mounting the amplifier on carpet will significantly reduce air flow, resulting in reduced thermal run times.
3. Mount the amplifier on a solid surface. Avoid mounting to subwoofer enclosures or areas prone to vibration. Do not install the amplifier on plastic or other combustible materials.
4. Prior to mounting the amplifier, make sure not to cut or drill into the fuel tank, fuel lines, brake lines (under chassis) or electrical wiring.

WIRING PRECAUTIONS

1. Before installation, make sure the source unit power switch is in the OFF position.
2. Disconnect the negative (-) lead of the battery before making any power connections.
3. When making connections, be sure that each one is clean and secure. Insulate all of your connections. Failure to do so may damage your equipment.
4. A secure clean ground connection is critical to the performance of your amplifier. Connect the ground directly to the car chassis to minimize resistance and avoid any noise problems.
5. Add an external fuse on the amplifier's positive (+) power lead and connect it as close as possible to the vehicle's (+) battery terminal. Use a rating that equals the total current consumption at full output of all amplifiers in the system. This external fuse will protect the vehicle from short circuits that can cause a fire.

INSTALLATION

VEHICLE ELECTRICAL SYSTEM:

Amplifiers (regardless of brand name) will put an increased load on the vehicle's battery and charging system. CT Sounds recommends checking your alternator and battery condition to ensure that the electrical system has enough capacity to handle the increased load of your stereo system. Original equipment electrical systems, which are in good condition, should be able to handle the extra load CT Sounds amplifier without problems, although battery and alternator life can be reduced depending on your individual listening habits. High power amplifiers producing 1500 watts or more may require additional upgrades to your vehicle's stock charging system. To maximize the performance of your amplifier, we suggest the use of a reserve power "Stiffening" capacitor (1 Farad per 1000W).

WARNING: Avoid running power wires near the low level input cables, antenna, power leads, sensitive equipment or harnesses. The power wires carry substantial current and could radiate noise into the audio system through the audio cables.

INSTALLATION:

1. Plan the wire routing. Keep RCA cables close together but isolated from the amplifier's power cables and any high power auto accessories, especially electric motors. This is done to prevent coupling the noise from radiated electrical fields into the audio signal. When feeding the wires through the firewall or any metal barrier, protect them with plastic or rubber grommets to prevent short circuits. Leave the wires long at this point to adjust for a precise fit at a later time.

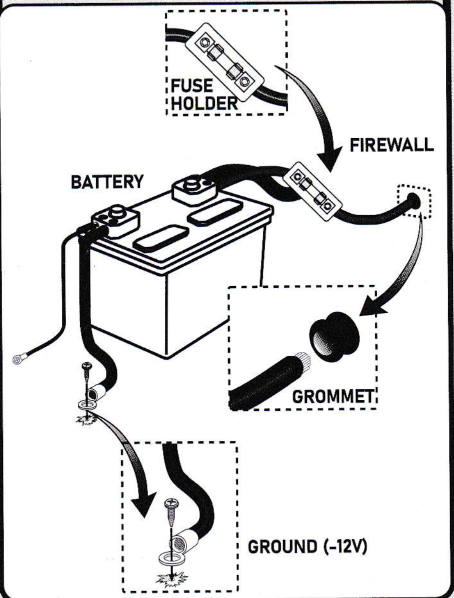
2. Prepare the power wire for attachment to the amplifier by stripping 5/8 inch (15.9mm) of insulation from the end of the wire. Insert the bare wire into the B+ terminal And tighten the set screw to secure the cable in place.

   WARNING: The B+ cable MUST be fused 12" or less from the vehicle's positive battery post. Choose a location to install a waterproof fuse holder under the hood and ensure connections are watertight. If you do not use the appropriate fuse holder, the connection will eventually suffer corrosion from moisture and heat.

3. Trim the power cable within 12 inches (45.7mm) of the positive battery post and splice in a in-line fuse holder. DO NOT install the fuse at this time.

4. Strip 1/2 inch (12.7mm) from the battery end of the power cable. Crimp and soldier a large ring terminal to the cable. Connect the ring terminal to the positive (+) battery post.

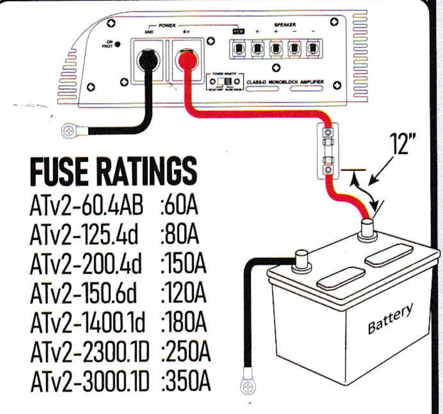
FUSE WIRE DIAGRAM



5. Prepare the ground wire for attachment to the amplifier by stripping 5/8" of insulation from the end of the wire. Always use a wire of the same gauge as the power connection, never smaller. Insert the bare wire into the GND terminal and tighten the set screw to secure the cable in place. Prepare the chassis ground by scraping any paint from the metal surface and thoroughly clean the area of all dirt and grease. Strip the other end of the wire, crimp and soldier a ring connector. Fasten the cable to the chassis using a non-anodized screw with a star washer and a nut.

WARNING: It is important to set your ground wire as close to your amplifier as possible, using the same gauge ground wire as your power wire. Ideally, this should be less than 12 inches away from your amplifier.

FUSE CONNECTION DIAGRAM



FUSE RATINGS

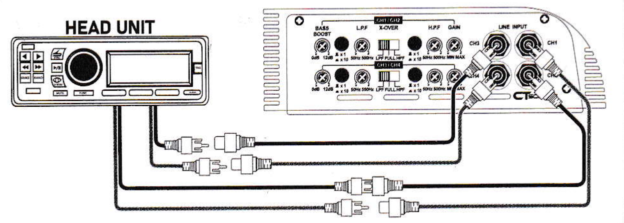
ATv2-60.4AB :60A
ATv2-125.4d :80A
ATv2-200.4d :150A
ATv2-150.6d :120A
ATv2-1400.1d :180A
ATv2-2300.1D :250A
ATv2-3000.1D :350A

6. Prepare the REM turn-on wire for attachment to the amplifier by stripping 5/8 inch (15.9mm) of insulation from the end of the wire. Insert the bare wire into the REM terminal and tighten the set screw to secure the wire in place. Connect the other end of the REM wire to a switched 12 volt positive source. The switched voltage is usually taken from the source unit's remote amp turn on lead. If the source unit does not have this output available, the recommended solution is to wire to an accessory terminal in the car's fuse block using a relay to isolate the amplifier from the vehicles accessory circuit. This however will turn the amplifier on and off with the ignition key, regardless of whether the car stereo is on or off.

7. Securely mount the amplifier to the vehicle or amp rack. Be careful not to mount the amplifier on cardboard or plastic panels. Doing so may enable the screws to pull out from the panel due to road vibration or sudden vehicle stops.

8. Connect from source signal by connecting the RCA audio cables to the input jacks at the amplifier.

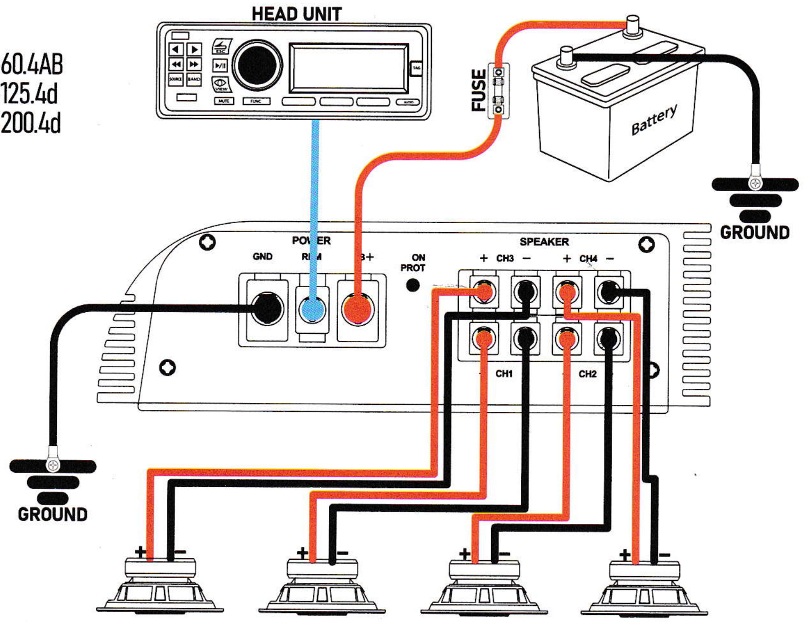
RCA CONNECTION DIAGRAM



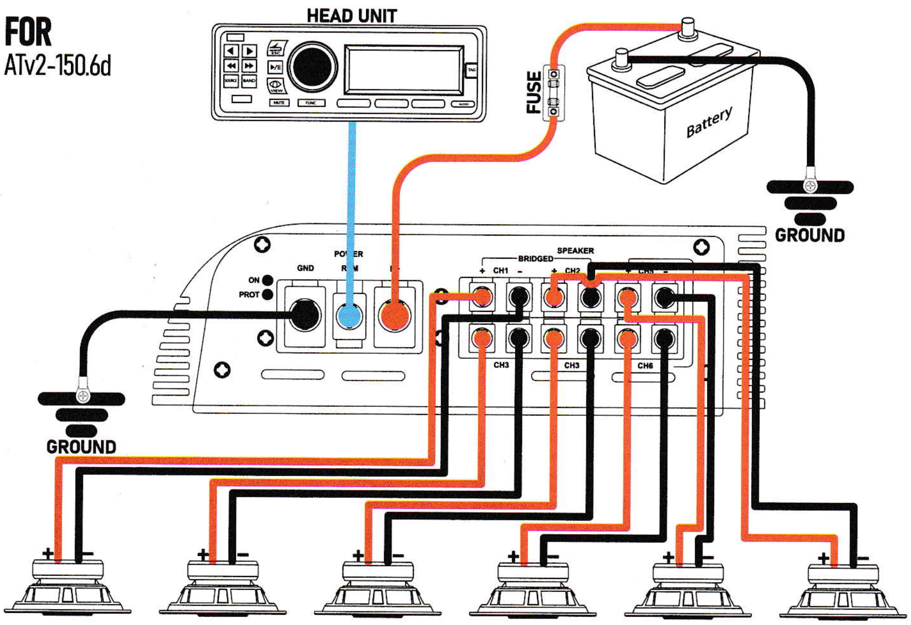
9. Connect the car speakers/subwoofers. When wiring the speakers/subwoofers pay careful attention to the polarity of the terminals on the speakers and make certain they correspond to the polarity on the amplifier. DO NOT chassis ground any of the speaker/subwoofer leads as unstable operation or damage to the amplifier and/or speakers/subwoofers may occur.

SPEAKER CONFIGURATION

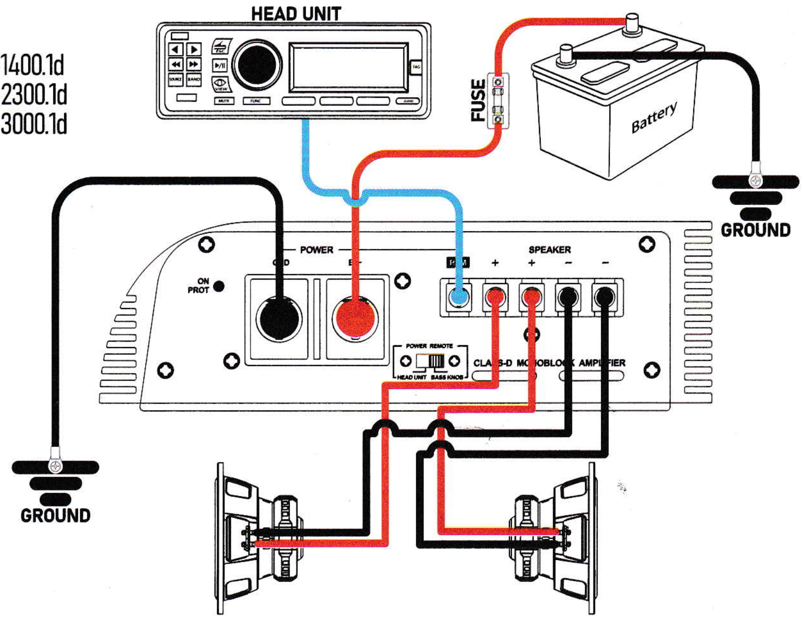
FOR
ATv2-60.4AB
ATv2-125.4d
ATv2-200.4d



FOR
ATv2-150.6d



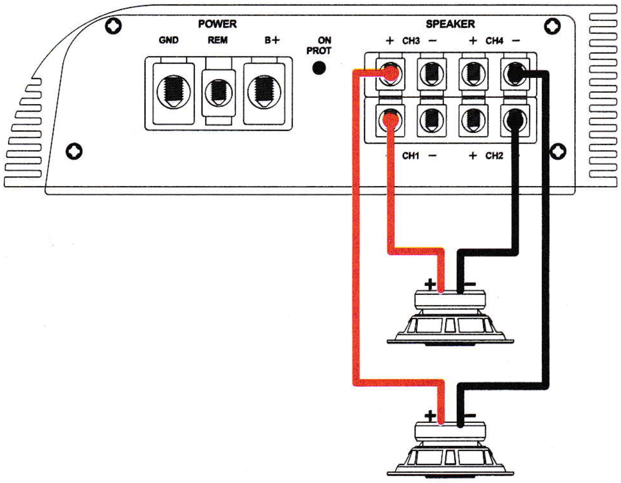
FOR
ATv2-1400.1d
ATv2-2300.1d
ATv2-3000.1d



4-CHANNEL WIRING DIAGRAMS

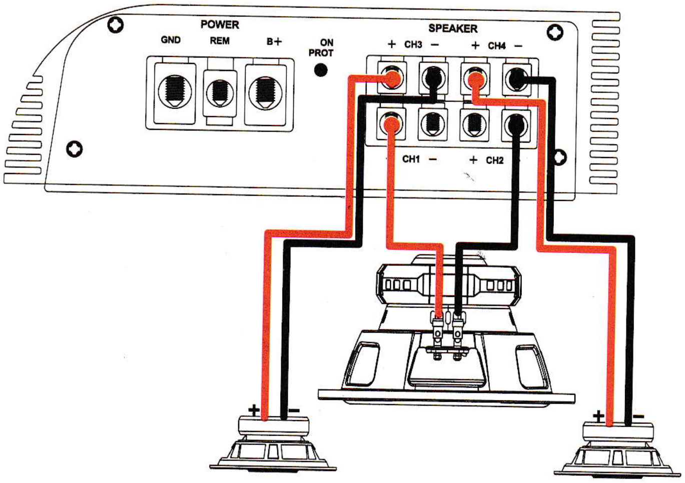
ATv2-60.4AB | ATv2-125.4d | ATv2-200.4d

2 SPEAKERS
BRIDGED



ATv2-60.4AB | ATv2-125.4d | ATv2-200.4d

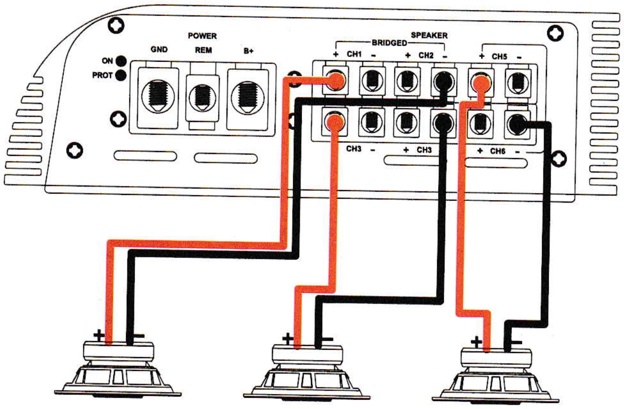
2 SPEAKERS + 1 SUBWOOFER



6-CHANNEL WIRING DIAGRAMS

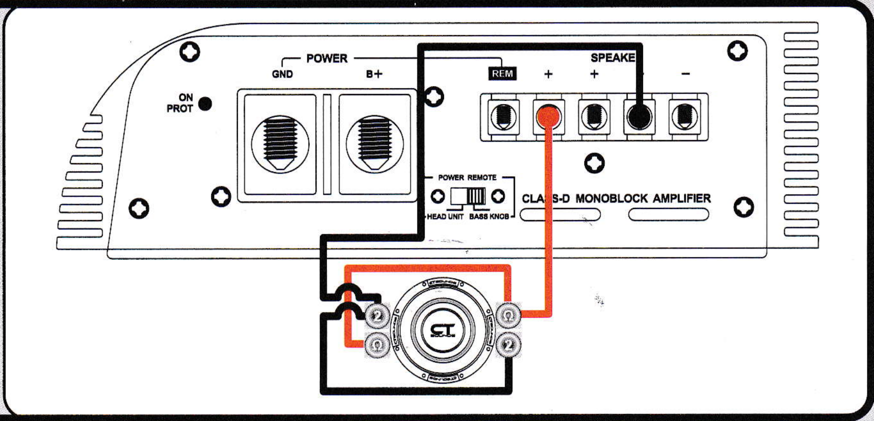
ATv2-150.6d

3 SPEAKERS BRIDGED

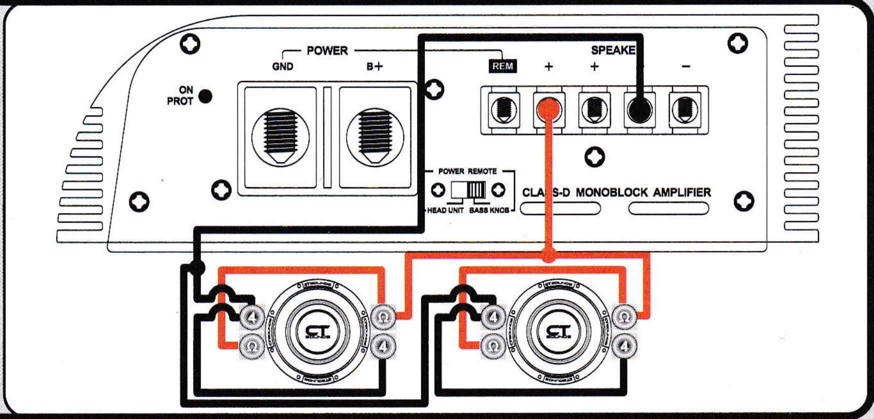


MONOBLOCK WIRING DIAGRAMS

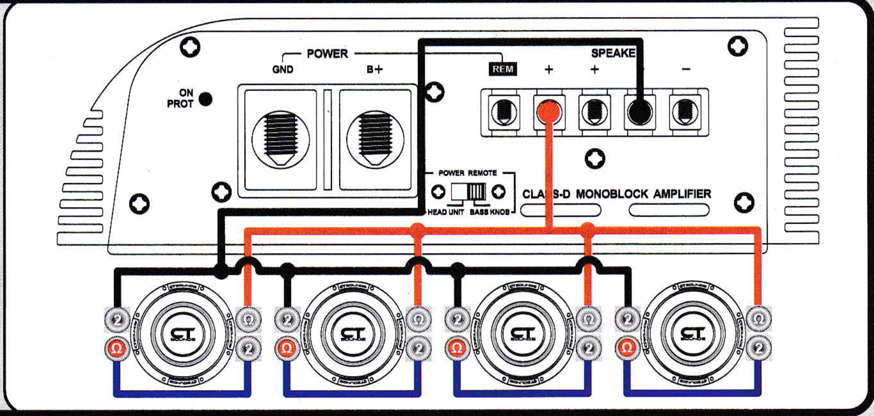
ONE 2Ω DVC SUBWOOFER
POWERED @ 1Ω LOAD



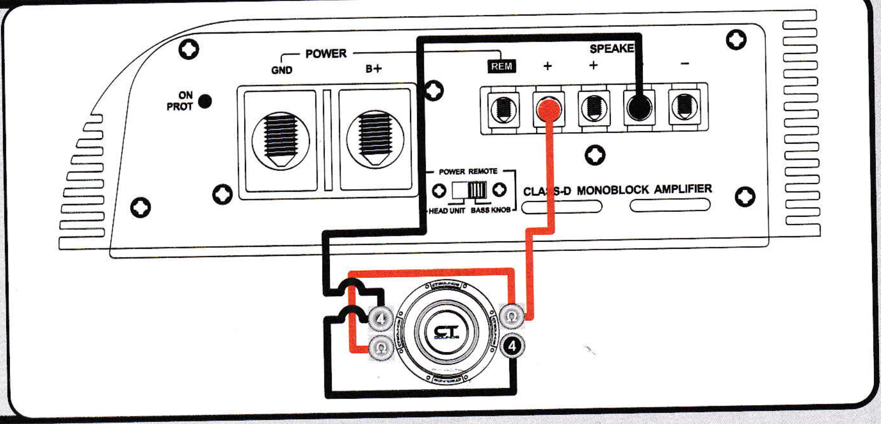
TWO 4Ω DVC SUBWOOFER
POWERED @ 1Ω LOAD



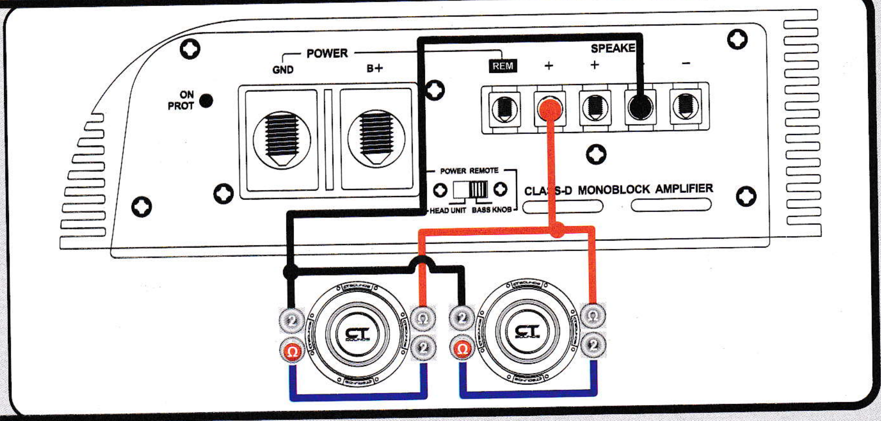
FOUR 2Ω DVC SUBWOOFER
POWERED @ 1Ω LOAD



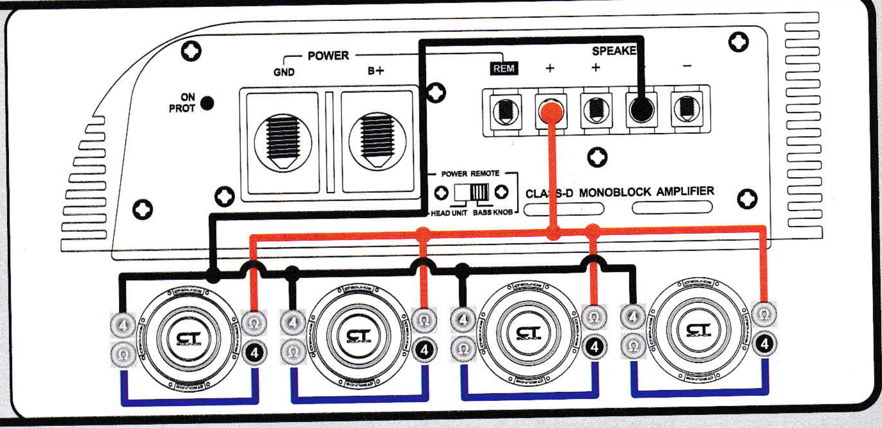
ONE 4Ω DVC SUBWOOFER
POWERED @ 2Ω LOAD



TWO 2Ω DVC SUBWOOFER
POWERED @ 2Ω LOAD



FOUR 4Ω DVC SUBWOOFER
POWERED @ 2Ω LOAD

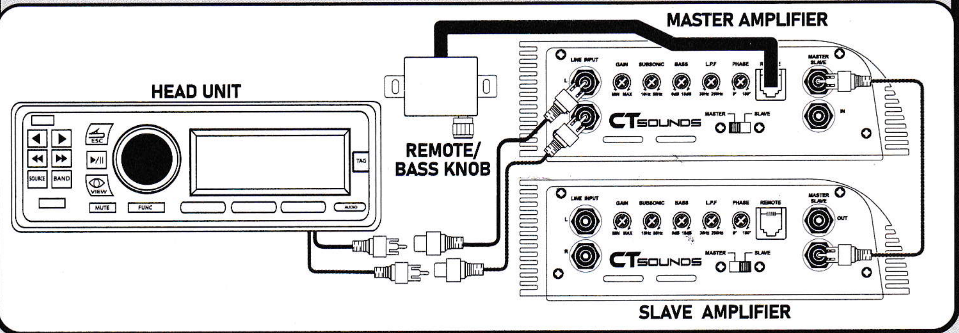


HOW TO STRAP TWO AMPS TOGETHER

NOTE: CT Series Amplifiers do not have a master/slave switch. However, they are still strappable. The switching technology is automated. The amplifier with the RCA connected to signal output is the master amplifier.

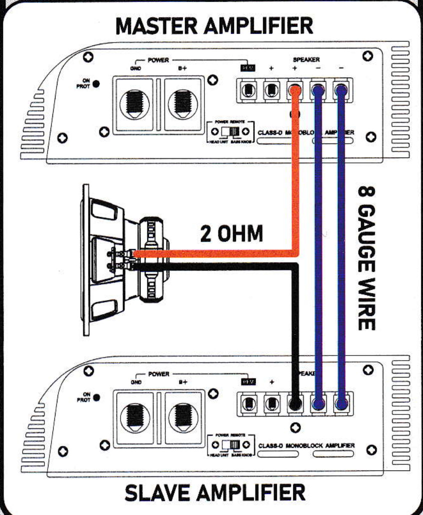
1. Connect your RCAs from your head unit to the amplifier that you've designated as the master.

RCA WIRE DIAGRAM



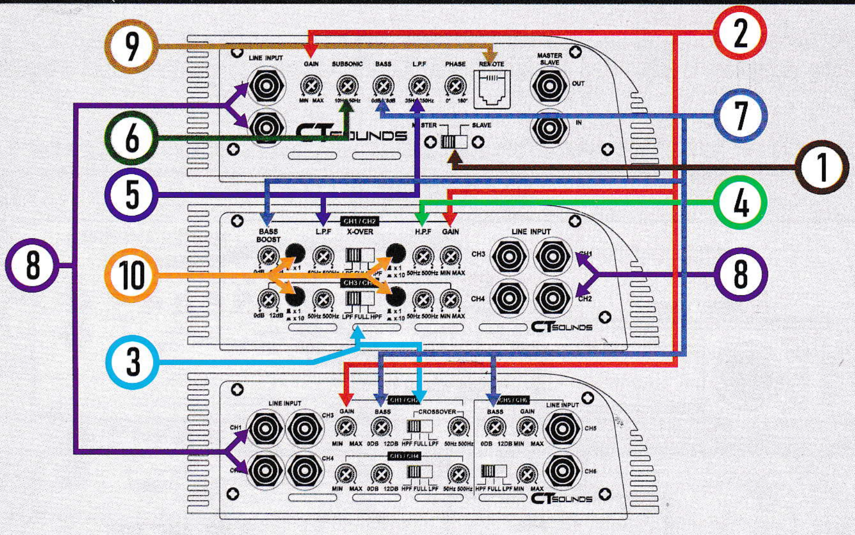
2. Look for the "BRIDGE OUT" RCA on the master amplifier and connect it to the "BRIDGE IN" RCA on the slave amplifier. The "BRIDGE OUT" from the master amplifier connects to the "BRIDGE IN" on the slave amplifier.
3. Start by connecting a jumper wire from the NEGATIVE terminal on your MASTER amplifier to the NEGATIVE terminal on your SLAVE amplifier.
4. Take your POSITIVE subwoofer lead and connect it to the POSITIVE terminal on the MASTER amplifier. Take your NEGATIVE subwoofer lead and put it in the POSITIVE terminal on the SLAVE amplifier. (That's SUB- to SLAVE+.)
5. Connect your remote wire to the MASTER amplifier and use a jumper to connect the remote terminals from both amplifiers together.
6. Finally, connect both amps to your power source (the car battery). Both amps still need to be connected to the car battery individually to receive adequate power.

SPEAKER WIRE DIAGRAM



Note: Strapping will give you twice the power and double the impedance load compared to having one single amplifier. If you have a 1000w amplifier at 1 ohm, and you strap it with an identical 1000w amplifier at 1ohm, you'll have 2000w at 2ohm. Each amp will still be responsible for handling it's own 1000w at 1ohm, but together they're sending out twice as much energy so you must ensure that your subwoofer can support this.

FEATURES



1. **Master/Slave Switch** - These control is used when using dual amp configuration, the master amplifier has total control over the slave amplifier. The slave amplifier controls are not used when in Dual Amp Configuration..
2. **GAIN** - This control matches the preamp stage of the CT Sounds amplifier to your source unit. The function of the gain knob is to maximize the signal to noise ratio by matching the amplifier's input sensitivity to match the output voltage to the source unit. This is not a volume control.
3. **CROSSOVER SELECTION SWITCH** - This switch allows you to select the crossover type. Use High Pass Filter (HPF) for midrange or high frequency speakers. Use Low Pass Filter (LPF) for subwoofers. In the full position, neither crossover adjustment knob has an effect and all speakers will receive the full frequency range.
4. **HIGH PASS FILTER (HPF)** - Use this adjustment to block frequencies below its set level. A HPF allows high frequencies to pass through, meaning it will filter out low frequencies. This can really help clean up vocals or instrumentations that do not have a lower frequency. For example, if your HPF is set to 150 Hz, only frequencies above 150 Hz will pass through the amplifier to the speaker.
5. **LOW PASS FILTER (LPF)** - Use this adjustment to block frequencies above its set level. A LPF allows low frequencies to pass through, meaning it will filter out high frequencies. For example, if your LPF is set to 70 Hz, only frequencies below 70 Hz will pass through the amplifier to the speaker.
6. **SUBSONIC FILTER** - Use this adjustment to block frequencies below its set level. A subsonic control allows you to remove the unwanted subsonic frequencies below the tuning frequency of a ported enclosure. This helps to protect the woofer from over-excursion. For example, if your subsonic filter is set to 30 Hz, only frequencies above 30 Hz will pass through the amplifier to the speaker.
7. **BASS BOOST** - This control adds 0 to +18dB of boost at 45Hz. Be cautious when adding boost to some subwoofer systems as they may not be able to handle the additional low frequency boost. In the 0dB position, no bass boost is added.
8. **RCA INPUT HARNESS** - The RCA jacks allow for a normal left and right channel signal input. Simply connect to the source unit using RCA type audio cables, keeping them away from power wiring wherever possible to reduce risk of noise.
9. **REMOTE LEVEL CONTROL** - AT-1400.1D, AT-2300.1D & AT-3000.1D Amplifiers have this port and it is for the remote level control (included).
10. **X1/X10 SWITCH** - AT-200.4D Amplifier have this switch and X1 or X10 is for wider LPF and HPF frequency range. If set X1 position, LPF is 50-500Hz, if set X10 position, then LPF is 500-5,000Hz, this is easier for precise adjustment

OPERATION OF NEW BASS KNOB

1. Connect the included 5m black cable with one end of the included remote control and insert the other end of the cable into the designated socket "REMOTE" on the amplifier. Amplifier can now be power on and off, and volume can be controlled remotely with the potentiometer. Install the bass knob within easy reach on or under your dash.

2. To work with the new bass knob, the power remote switch must be switched to "Bass Knob". It is switched to "Bass Knob" from the factory.

3. Press the push switch, and the volume power on.

4. When the bass knob is switched on, the amplifier powers on and "ON" is displayed on the LCD approx. 3 seconds and Input Voltage is displayed afterwards.

5. When the bass knob is switched off, "OFF" is displayed on the LCD approx 3 seconds and the bass kob is off. The amplifier is powered off too.

6. When the input voltage is over 16 Volt, "HI" is displayed on the LCD and the input voltage is displayed in a sequence until the input voltage is lower than 16 Volt.

7. When the input voltage is lower than 10 Volt, "LO" is displayed on the LCD and the input voltage is displayed in a sequence until the input voltage is higher than 10 Volt.

8. When the amplifier goes into thermal or short condition and protection circuit starts to protect the amplifier and the amplifier stops, "PRO" is displayed on the LCD.
   When the amplifier return to a normal condition, the LCD displays the amplifier's condition.

9. When the vehicle is turned off, the amplifier and the bass knob turns off on is own. The bass knob has the last memory :
   When the bass knob is on and vehicle is turned off, the amplifier and bass knob turn off on its own.
   When the vehicle is turned on again, the amplifier and bass knob turn on again on its own.
   When the bass knob is off and vehicle is turned off and turned on again, the bass knob still keeps the last memory (off condition) and must be turned on to activate the amplifier again.

10. When the bass knob is faulty or missing and you want to run the amplifier without using the bass knob, please switch the power remote switch from "Bass Knob" to "Head Unit".
    When you use the bass knob again, please switch the power remote switch from "Head Unit" to "Bass Knob" again
11. The amplifier can be controlled only with the knob.

12. How to connect the bass knob :

1) When the bass knob is used :

Please connect all wires of the amplifier (B+, GND, REM and speakers) and connect the bass knob and switch the power remote switch to "Bass Knob".

2) When the bass knob is not used :

Please connect all wires of the amplifier (B+, GND, REM and speakers) and switch the power remote switch to "Head Unit".

Note: When the new bass knob is connected to amplifier, the power remote should be switched to "Bass Knob" position to work the bass knob correctly.
If the bass knob is switched to "Head Unit" position, the amplifier does work but the bass knob's on/off does not work.
Therefore, when the amplifier does work but the bass knob's on/off function does not work, please double-check if the power remote selectable switch is correctly switched to "Bass Knob" position.

POWER, GROUND AND SPEAKER WIRES

MODEL	POWER & GROUND WIRE (RECOMMENDED)	SPEAKER/SUBWOOFER WIRE (RECOMMENDED)
ATv2-60.4AB	4 Gauge	8 Gauge
ATv2-125.4D	4 Gauge	8 Gauge
ATv2-150.6D	0 Gauge	8 Gauge
ATv2-200.4D	0 Gauge	8 Gauge
ATv2-1400.1D	0 Gauge	8 Gauge
ATv2-2300.1D	0 Gauge	8 Gauge
ATv2-3000.1D	0 Gauge	8 Gauge

NOTE: The power and ground wires need to be thick enough to accommodate the amp's demand for electrical current or the amp won't operate properly or put out its rated power. Before any power connections are made, disconnect the ground cable at the battery. The negative battery terminal must be disconnected before any electrical connections are made.

- Make sure your vehicle uses a 12-volt negative ground system. If you are not sure of the type of electrical system in your vehicle, consult your authorized dealer or a qualified mechanic.

- Connect the proper gauge power wire to the amplifier "B+" terminal. Run the wire towards the fuse holder that is no greater than 0.5 meters from the battery. Remember, the fuse is to protect the safety of the car in the case of a short. Connect the fuse holder to the battery, but do not install the fuse at this time.

- When the power supply lead, memory backup lead, or ground lead are extended, use a 5mm2 or larger automotive grade cable. NOTE: The proper grade wire is necessary to withstand friction and heat to safeguard against fires occurring as a result of short-circuiting.

- GND = Connect the proper gauge ground wire to the amplifier "GND" terminal. Locate the position on the chassis of the car to which the amplifier is to be grounded. The surface must be free from any paint or dirt. This can be accomplished with a small grinding bit, sandpaper or wire wheel.
  NOTE: Do not ground the amplifier to the "frame of the car. The framework on most cars and trucks is not grounded to the chassis (body). Use Solder or a clamp ring to connect the ground wire. Pre-drill the prepped chassis to bolt the ground ring terminal with nut, bolt, and lock washers. Insulate metal and connector with paint or silicon to prevent rust and oxidation. Silicon also works great to prevent nuts and bolts from working loose. Upon completion of the ground connection, grab wire or connector and confirm that it is a solid connection. It is recommended to ground the head unit and other audio electronics in the same location to avoid engine noise.

- REM = Connect the remote wire (power antenna output) from the head unit to the remote turn-on wire of the amplifier. If the head unit is not equipped with a remote/antenna output, locate a wire that is controlled by the accessory position of the key. It is essential to have the amplifier turn off with the radio or key. If the amplifier remains on, the result will most likely be a dead battery.

- NEVER operate the amplifier without proper power and ground wire. The power and ground wires need to be thick enough to accommodate the amp's demand for electrical current, or the amp won't operate properly or put out its rated power.

- NEVER run wiring underneath or outside the car since exposure to the elements will cause the insulation to deteriorate, resulting in short-circuits and/or intermittent operation. All cables should be run beneath carpets and inside trim pieces.

- NEVER ground the speaker leads and NEVER allow the speaker leads to come in contact with each other.

- Always use a high-quality RCA cable input wiring is preferred for the best audio performance.
  It is best to run the power cables along the opposite side from the audio cables to help minimize interference.

- Use a rubber or plastic grommets whenever wires pass through metal to prevent the metal from wearing through the installation and causing a short.

- Whenever possible, use cable ties, mounting clamps, and similar wiring aids. Also, it is advisable to add stress relief loops to the wiring to prevent straining or breakage.

PRIMARY CAUSES OF AMPLIFIER FAILURE

There are many reasons for an amplifier failure. The primary causes of car amplifier failure are environmental, user, and installation issues, not a component failure. With this in mind, the leading cause of amplifier failures are

1. **VIBRATION DAMAGE** - This is by far the most common and most significant cause of amplifier failure. The biggest mistake is mounting an amplifier on a subwoofer enclosure. The vibration causes the parts/components to break off the board, causing failure that can span from seconds to days, or even sometimes months.

   Always ensure mounting the amp on the location of the car where there is the lowest vibration. Like underneath the seat, trunk or hatch area or better install an amplifier rack. Also try using some vibration damper as well.

2. **LOW IMPEDANCE** - This is the second largest cause of amplifier failure. Amplifiers require speaker ohm loads to regulate the output electrical current. When an amplifier is run below the minimum suggested impedance, the amplifier is forced to output more current than the components inside were designed to handle. This creates failure that can be within seconds of operation or within months.

   Always ensure not running the amp under 1 ohm impedance. None of our amplifiers support under 1 ohm impedance.

3. **BLOWN OR SHORTED SUB WOOFERS OR SPEAKER COMPONENTS** - If Speakers or Subwoofers are overdriven or overheated, the coils within them short and create a zero resistance across the speaker output connector of the amplifier, exposing the amplifier outputs to a dead short that damages the amplifier. In most cases users blame the amp itself without knowing their speaker/ subwoofer actually damages the amp.

   Always make sure the speaker or subwoofer is not blown or shorted. Try checking the resistance of the speaker/subwoofer using a multimeter. So that you are sure they are not blown or shorted.

4. **POOR CONNECTIONS** - This problem is most often caused by oxidation, poor location of connections, loose set screws, or corroded wire. Either the Ground or the 12V wire can both be responsible for poor connections. Oxidation and loose connections create the inability to carry the electric current needed to the amplifier power supply circuit. The high demand in current, at the same time, there is a lack thereof, causes power supply components to overheat and fail and/or burn.

   Always check the wiring before installing the amp. Do the test using a multimeter. Better of getting help from a professional or from a local car audio shop.

5. **BAD HEAD UNIT** - The head unit (The Radio) can be the cause of mysterious, strange failures. When the head unit fails, the RCA output circuit within it usually kicks out, a DC voltage, and into the input RCA connector of the amplifier. This will damage an amplifier in record time! Always make sure the head unit is functional before installation.

Before installation make sure the head unit is functional and works properly.

6 **BAD ALTERNATOR(s)** - Alternators are another area of severe amp failure. Often an Alternator that goes bad can put out 20V or higher, damaging an amplifier in record time.

Check your alternator if it's working well. And check the output current to make sure it's not delivering a higher voltage.

7 **INSUFFICIENT AMOUNT OF BATTERIES** - This can create a similar situation like poor connections. There will be insufficient current to feed the amplifier consistently, and imminent failure would ensue.

Always ensure you have a battery that can deliver enough power to your vehicle including your amplifier. If you don't know which size battery you need, please get help from a professional.

3 **POORLY FASTENED AMPLIFIERS** - Amplifiers that are not fastened down and are allowed to slide back will fail like a vibration damage issue. RCA jacks often get broken in this situations.

Always ensure you fasten the amplifier properly. If possible use some vibration damper material as well.

4 **PINCHED AND/OR SHORTED SPEAKER WIRE(s)** - Pinched and/or Shorted speaker wires are usually a hidden problem that creates severe amplifier failure. Many times while running speaker wires, Molding and molding fastener screws can penetrate the speaker wires and short the amplifier outputs to the automobile ground. Wire strands can also be touching in the speaker enclosure as well.

Always ensure the speaker/subwoofer is not pinched or shorted. Try using a multimeter to do a quick check.

5 **POOR GROUNDING** - Improper grounding points can starve an amplifier of much-needed current, causing it to fail much like a poor connection. Proper grounding is imperative for these devices.

Always ensure you have a proper ground. Use a heavy ground cable and connect one end to the negative battery terminal, and the other end to the starter motor or engine block as close to the starter as possible. This will insure the correct ground path to the starter motor.

If you are unsure about any of the failures mentioned above causes, CT sounds urges you to go to a local car audio shop and have it professionally installed.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	SOLUTION
NO OUTPUT	Low or no remote turn-on input.	Check remote turn-on voltage output at the amplifier.
	Blown fuse.	Check power wire reversed polarity, and replace the fuse.
	Power wires not connected.	Check power wire and ground connections (repair/replace).
	Audio input not connected or no output from the source.	Check input connections and signal integrity (repair/replace).
	Speaker wires not connected.	Check speaker wires (repair/replace).
AUDIO CYCLES ON AND OFF	The speakers are blown.	Check system with known working speaker (repair/replace).
	Thermal protections engage when the amplifier heat sink temperature exceeds 90°C.	Make sure there is proper ventilation for amplifier and improve ventilation as needed.
	Loose or weak audio input.	Check input connections (repair/replace).
DISTORTED OUTPUT	Amplifier level sensitivities set too high, exceeding maximum output capability of amplifier.	Reset gain referring to the turning section of the manual for detailed instructions.
	Impedance load to amplifier too low.	Check speaker impedance load if below at 2-ohm stereo or 4-ohm mono rewire speakers to achieve a higher impedance.
	Shorted speaker wires.	Check connection (repair/replace).
	Speaker is not connected to the amplifier properly.	Check speaker wiring and repair or replace as needed.
	Speakers are blown.	Check the system with known working speakers and repair or replace them as needed.
POOR BASS RESPONSE	Speakers wired the wrong polarity causing cancellation at low frequencies.	Check speaker polarity and repair as needed.
	Crossover set incorrectly.	Reset crossover referring to the multi-cross crossover configuration sections of this manual
BATTERY FUSE BLOWING	Impedance load to amplifier too low.	Check impedance load if below 2-ohm stereo or 4-ohm mono rewire speakers to achieve a higher impendence.
	Short in power wire or incorrect power connections.	Check power and ground connections (repair/replace).
	Fuse used is smaller than recommended.	Replace with proper fuse size.
	Too much current is being drawn if below 2-ohm stereo, or 4-ohm mono rewire speakers to achieve a higher impedance.	Check speaker impedance load.
	Short in power wire or incorrect.	Check power and ground connections (repair/replace).
AMPLIFIER FUSE BLOWING	Too much current is being drawn.	Check speaker impedance load, if below 2-ohm stereo or 4-ohm mono rewire speakers to achieve a higher impedance and replace with recommended fuse size.
	Fuse used is smaller than recommended.	Replace with proper fuse size.

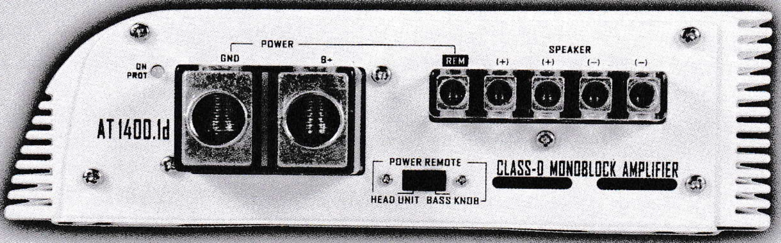
UNDERSTANDING YOUR AMPLIFIER

The primary function of a car audio amplifier is to faithfully reproduce the audio signal from your source unit at a magnitude that is greater than the source can produce without an amplifier. There are numerous variations and functions of amps. We will cover the most common features and functions.

RMS POWER VS PEAK POWER

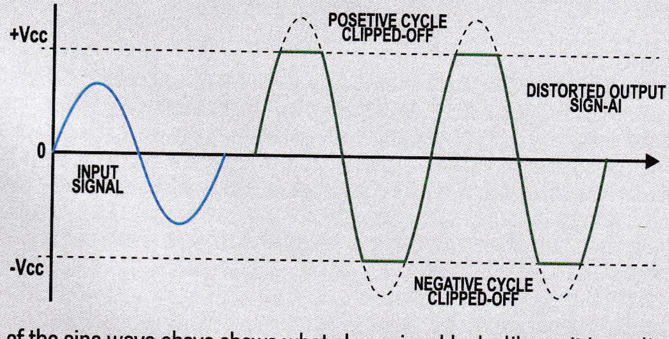
RMS Power, rated power is the measure of the amplifier's continuous power. It is the average wattage output over a set amount of time. Peak Power is the "peak" amount of power that the amplifier can generate or handle in very short bursts. Peak Power is marketed by less scrupulous manufactures to catch the consumers' attention.

Use only RMS Power to match the right speaker/subwoofer with the right amplifier.



GAIN SETTING

Gain (also called sensitivity) is an often misunderstood setting on an amplifier. The amplifier is designed to output a set maximum power and nothing more. The gain setting is NOT a volume setting. The purpose of the gain setting is to tell the amplifier at what point it is supposed to reach the desired RMS level. Once you run out of head room, the amplifier is no longer able to increase the magnitude of the output signal, and you create nothing more than heat (both in your speaker/subwoofer but also your amplifier). See the below image for clarification.



The blue portion of the sine wave above shows what clean signal looks like as it is applied to the output stage of your amplifier. However, if your gain setting is too high, once your cross the threshold of the output limit of your amplifier (the output rail voltage), you will begin to output signal that looks like the green sine wave above. This is extremely hard on your equipment and is without question the **most common way that amplifiers and speakers/subwoofers are damaged**. It also sounds terrible.

The goal is to determine what input sensitivity setting is appropriate for your application. Now that you understand what the gain does, you need to apply it correctly. There are numerous tools available on the market to aid in this goal, and below are some that work well:

O-Scope: There is an extensive range of prices for this device, but you don't need to buy the Ferrari of O-Scopes, there are many available for under $100.

SMD DD-1: This is likely the most common and well-known distortion detector in the car audio industry. They work very well and will last a very long time.

Digital Multimeter: This is usually most helpful when your amplifier is capable of more power than your speaker/subwoofers is rated. By using a DMM, you can read the output voltage of your amplifier and apply Ohms Law and the Power Wheel to calculate - find power (recommended for more advanced users). YouTube is an excellent source for more information on this topic, search for "setting gains with DMM."

DIY Distortion Detector: There is a DIY solution for building your own distortion detector using a tweeter as a high-frequency harmonic detector (high-frequency noise that occurs in distorted signal). There is also a wealth of information available on this. YouTube is your friend! Search for "tweeter distortion detector."

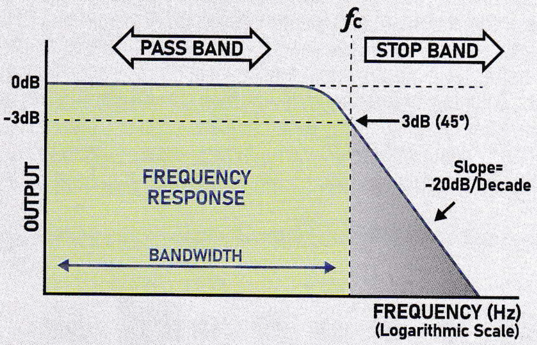
By Ear: It is possible to set your gains by ear, but there is a common misconception that goes along with this. You can play a test tone (commonly 40hz for subwoofers and 1khz for midrange channels), and slowly increase the gain (listening VERY CAREFULLY), and you will hear a point where the sound goes from crisp and clear to "slightly colored," or not as good. Often people stop as soon as they hit the "not so good" area and think they are safe or only "soft clipping." The reality is that there are VERY FEW people in the world with ears acute enough to hear the onset of distortion. In fact, you are likely in a HARD clip once you determine it to be audible. So if using this method, please be very cautious, and once you hear ANY distortion, back off the gain AT LEAST 10%. There is a likelihood that this means that you may not fully reach the full output potential of your amplifier. However, an amplifier that puts out 90% for 10 years is substantially better than an amplifier that makes 100% power for 10-days and then fails.

BASS BOOST

Bass boost is a feature designed to boost the low range frequencies. It is typically used for subwoofers. We recommend not adjusting the bass boost unless you have full knowledge or experience with it. It is very sensitive and, if done incorrectly, will lead to subwoofer failure.

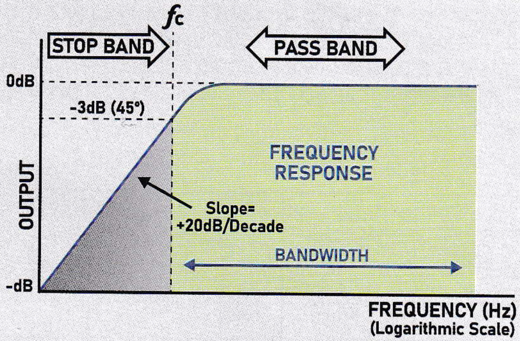
LOW PASS FILTER (LPF)

A low pass filter is used to shape the sound of the output of your amplifier. It tells the amplifier which frequencies that you would like to be played on the selected channel. Low pass filters tell the amp how "high" the specified channel is to play. For example, for subwoofers, you use a low pass filter to tell your amp that you have a subwoofer on that channel, so you don't want the amplifier to send any high-frequency information to that channel. Luckily we can adjust the desired frequency and tailor the slope to best suit our needs. Below is an example of a low pass filter, and as you can see in the image, the flat portion of the graph shows the information that your subwoofer channel would be playing. As you approach the crossover frequency, the amplitude (volume) of that channel drops down. This does two main things, it lets us move the crossover points to where we like it or where it sounds the best in our specific application, but it also protects our drivers from trying to play frequencies that they are not designed to perform.



HIGH PASS FILTER (HPF)

Much like low pass filters, high pass filters allow us to indicate what frequencies we want the amplifiers to play on a specific channel. However, in this case, we are telling the amplifier lowest note that we want to be played on the specified channel. This is particularly helpful with midrange speakers and tweeters, as low-frequency reproduction below their intended frequency response is extremely hard on them. If you have ever heard a speaker bottom out, it will raise the hair on the back of your neck! So by applying the high pass filter, we can isolate the high-frequency information that we want for our mids and highs and protect them from the low-frequency information that our bigger speakers are playing (subs below mids and mids below tweets respectively). Below is an example of a high pass filter.



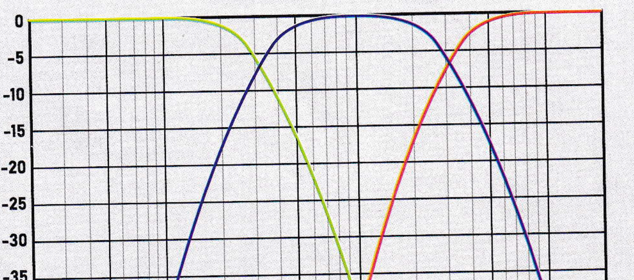
SUBSONIC FILTER

A subsonic filter is an often misunderstood setting on an amplifier, but one that is extremely useful in the protection of your subwoofers in specific applications. The subsonic filter works in the same fashion as a high pass filter, but it is applied to the subsonic (below 40hz) region of the frequency response. What this does is tells the subwoofer channel the lowest note that you want it to play before rolling off the output of the subwoofer channel. Now, wait, I know what you are thinking, "Why would I not want my subwoofers to play as low as possible?" GOOD QUESTION! The reality is that this is very application-specific. If you are using a sealed enclosure or a 4th order bandpass enclosure, then you don't need to worry about it, and the subsonic is not crucial to your application. However, if you are using a ported enclosure or a 6th order bandpass enclosure, then this is very important to you! The benefit of having a vented enclosure is that you can manipulate the output curve of your overall subwoofer system (driver and box combined).

The drawback to this is that when you play BELOW the tuning frequency of your port, you no longer have the acoustic compliance of the enclosure and the port becomes "transparent" to your sub/subs. This means essentially that your sub starts to behave as if it isn't in a box. Depending on your sub, some subwoofers handle this better than others, but in most cases, this is a good way to start breaking stuff (torn spiders, triple joints, coil slap, broken tinsel leads, torn surrounds, etc.). So by using a subsonic filter, you can tell the amplifier, "hey, my box is tuned to XXhz, and I don't want you to play below that." Generally, you are safe to go about 5hz below your tuning frequency for subsonic. So if you tune to 35hz, set your subsonic to 30hz. The graph looks exactly like a high pass just below 40hz

Crossover Network as a Whole

So now that we have talked about the three main types of crossovers (there are many more that are less common). You might wonder, well, how does that all relate to how my system will sound. The key is to understand that they have a relationship. You want them to overlap, but not in the way that you would think. If you set your LPF on your sub-channel to the same frequency as your HPF on your mids (which is what common sense would dictate), you will have a "peak" in output at that frequency (which sounds BAD). The key is to get them close enough to make a smooth transition without having a gap. This can take some trial and error, but the intent is for your final output curve to look like this:



In this example, you can see the green LPF for the subs, the blue bandpass (both an LPF and HPF, with desired frequencies in the middle) for the mids, and the red HPF for the tweeters. Luckily, in most cases, you will only need to worry about the intersection of the blue and green crossovers, as the blue-red intersection happens in the crossover network that comes with component speakers.

LIMITED WARRANTY

KEEP THE ORIGINAL PACKAGING IN CASE OF RETURN

All amplifier products purchased from www.ctsounds.com come with a 1-Year Limited Warranty. To start a warranty process, please open a claim here: https://ctsounds.loopreturns.com/#/

CT Sounds' Warranty Policy covers defects in materials only. Our warranty policy does not cover the following:

- User error
- Accidental damage
- Improper installation
- Product abuse
- Modified or repaired products
- Using the product outside of recommended specifications
- Amplifiers without a warranty seal
- Less than adequate electrical to support high-powered amplifiers

30-DAY MONEY BACK RETURN POLICY

KEEP THE ORIGINAL PACKAGING IN CASE OF RETURN

CT Sounds stands behind our products and if you are not 100% satisfied with your purchase you may return it within 30 days of delivery (delivery means the date the shipment was marked delivered by the carrier's tracking number). CT Sounds provides a prepaid return label (RMA# and return shipping address) that will be sent to you via email.

Upon receiving your items, we request 2 business days to inspect the item and process your return. Once inspected and processed by our team for a refund, we will credit the purchase price back to the original payment method less the cost of the shipping rate we paid to send the item to you. Please allow 3 to 5 business days for your funds to arrive back to your original payment method. If we discover the item was used, we will not issue a refund. You can start a return by visiting this link: https://www.ct-sounds.com/a/returns

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COMPANY VALUES

- **QUALITY** - We focus our utmost attention to detail of function and aesthetics while delivering a premium product to our clients.
- **CLIENT COMMITMENT** - We hold the highest standard of service and strive to surpass the expectations of our clients. Our motto is SERVIAM, which means to serve. You can reach our team at hello@ct-sounds.com.
- **COMMUNITY** - We develop relationships and bring audio enthusiasts together from all over the world that share similar interests and hobbies. We strive to connect all walks of life. We treat everyone with respect and dignity and, most importantly, having fun while doing so. We invite you to join the CT Sounds FAMILY.
- **PASSION** - We wholeheartedly believe no vision can endure unless built upon passion and desire to bring value to our clients. YOU are the reason we get up every day. We love car audio and especially our clients.
- **IMPROVEMENT** - We, as a company, are consistently and continuously testing and improving products that are redefining the industry. There is always room for improvement. We believe you deserve better, and we commit to being better every day! CT Sounds is the Future of Sound. We look forward to serving you.